to size, shape, relative size and prominence of the beaks, striæ and appearance of the surface, color, translucency or opacity of the shell. Some of the full-grown examples are straw-colored all over, others horn or grayish with a broad or narrow light zone along the margins. None of the different forms can be regarded and described as typical and the others as varietal since they are connected by intergradations. In younger specimens, the superior margin is generally less curved, the anterior and posterior more so than in the adult. The rugosity of the inner surface of the shell is like that of *Pis. noveboracense*, although microscopical, much coarser than e. g. in *P. variabile* Pr. and *compressum* Pr.

Pis. atlanticum seems nearest related to *P. noveboracense*, but the mussel is shorter, its posterior part comparatively higher, the supero-anterior slope is steeper and the color is different.

SOME NOTES ON BERMUDIAN MOLLUSKS.

BY OWEN BRYANT.

Dr. Pilsbry, in his article on "The Air-breathing Mollusks of the Bermudas" in Transactions of the Connecticut Academy (Vol. X, part 2, p. 493, Sept., 1900) says: "From the data supplied by Prof. Verrill's expedition and that of Prof. Heilprin, it seems that *Vallonia pulchella*, *Cecilioides acicula*, *Agriolimax lævis* and *Physa acuta* rest upon single records now nearly twenty years old, and they may not have permanently colonized; but as none of them are conspicuous forms, and no special collectors of land shells have sought for them, the merely negative evidence is inconclusive."

In this connection it is interesting to note that *Physa acuta* Drap., was found by Mr. Davis and recorded in the NAUTILUS (Vol. XVII, p. 125, Mar., 1904). *Cecilioides acicula* Müll. and *Vallania pulchella* Müll. were found by Mr. Addison Gulick and myself on the grounds of the Hotel Frascati, while studying at the Bermuda Biological Station in July and August, 1903. A careful search would very likely reveal *Agriolimax lævis* Müll.

Vallonia pulchella (Müll.).

First recorded by Jones, 1876. (The Visitor's Guide to Ber-

muda, by J. M. Jones. Halifax, 1876, p. 138). It occurs also in the lists of Bland, 1881 (In Wallace's Island Life, p. 256) and of Heilprin, 1889 (The Bermuda Islands, p. 182).

I found it scarce under loose stones on the grass near the Frascati.

Cecilioides acicula Müll.

First recorded by Bland in 1861 (Annals of the Lyceum of Natural History of N. Y., VII, p. 351). Also recorded by Jones in 1876.

I first found a dead shell of this species in looking over some red earth at the laboratory. Later I discovered thirty-five or more on the ground under an overhanging stone about 100 feet from the first locality. Most of these were either alive or recently dead. The soft parts were drawn up above the body whorl. It probably lives in the grass.

For the identification of this species I am indebted to Mr. Paul Bartch who kindly compared specimens with those in the National Museum.

Zonitoides arboreus (Say).

This species is apparently unrecorded; a considerable number were on the under side and in the crevices of a large rotten log in a bamboo thicket near the Frascati. They are somewhat lighter and yellower than New England specimens.

Vitrea lucida (Drap.)

The first mention of this species is made by Prof. A. E. Verrill (Trans. Conn. Acad. Vol. xi, pt. 2. p. 733, fig. 81), who says: The fresh shells of this species were found in large numbers by Mr. A. H. Verrill in March 1901, in a garden at Hamilton but none were living. The last whorl of many of the shells was distorted and rough, as if the conditions had been unfavorable for some time before death. Perhaps the weather was too dry. It is doubtful therefore whether it has succeeded in establishing itself permanently in the islands. It is a native of southern Europe."

I found this species very abundant in the Botanical Garden, at Hamilton. They were on the ground and under leaves in flower beds, and beside a wall where shrubs and vines were growing. Many were alive though a large proportion showed the distortion which Professor Verrill speaks of and which is well shown in the figure he gives.

Vitrea lucida seems now to have become a part of the fauna of the Bermudas.

In closing I take pleasure in acknowledging my indebtedness to Mr. A. Gulick for his kind assistance in the determination of the species named above, and to Dr. Pilsbry for the final determination of *Vitrea lucida* and *Zonitoides arboreus.*

NOTES.

Pennsylvanian Snails and the State Zoologist.—In the last Monthly Bulletin of the Division of Zoology of the Pennsylvania State Department of Agriculture (Vol. II, no. 8), Prof. H. A. Surface, the State Economic Zoölogist, remarks (p. 245): "Since very little has been written concerning the molluscan life in Pennsylvania, we may at some future time prepare a Bulletin upon this particular subject," etc., etc. As most of the common non-marine mollusks of the Eastern States were described by Thomas Say from Pennsylvanian examples, and there have been articles bearing on our mollusks published at pretty short intervals for almost a century, we had somehow gotten the idea that a good deal had been "written concerning molluscan life in Pennsylvania." To be told that all that conchologists have done upon Pennsylvanian mollusks in a hundred years looks "very little" in the official eye of the State Zoologist, is discouraging. He must be looking for something the size of the Encyclopedia Britannica. We are on the watch for that promised Bulletin.

Californian Nudibranchs.—The publication of Dr. MacFarland's preliminary account of the Doridida (sens. latiss.) of Monterey Bay (Proc. Biol. Soc., Wash., Feb., 1905), is an event of no little importance to malacology. Out of twenty species, fifteen are new, three belonging to new genera. Two of the new genotypes I had in hand in 1901, and prepared descriptions; but I learned by correspondence with Dr. MacFarland that he had them earlier, and had studied their anatomy. I can, however, cite localities extending their range far southward. *Hopkinsia rosacea*, MacF., was collected by Miss V. Thomas at La Jolla, Aug. 3, 1901. The specimen was apparently immature, being only about 12 mm. long, with only 5 branchial plumes. Its color was a brilliant crimson, the dorsal pro-